

Transportation Plan

Whitewater Unit Master Development Plan Fram Operating, LLC

Presented to:

**Bureau of Land Management
Grand Junction Field Office
Grand Junction, Colorado**

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TRANSPORTATION PLAN

WHITEWATER UNIT MASTER DEVELOPMENT PLAN

1.1 INTRODUCTION

This Transportation Plan addresses road use and traffic associated with Fram Operating, LLC's (Fram's) proposed Whitewater Unit Master Development Plan (MDP). The Whitewater Project Area is located in Mesa County, Colorado, southeast of the City of Grand Junction. The Whitewater Unit MDP includes exploration with 12 new well pads in the northern half of the unit, in an area that is generally bounded by the town of Palisade and the unincorporated community of Clifton to the north, the Mesa Plateau to the east, Kannah Creek Road to the south, and U.S Highway 50 (US 50) to the west.

Fram intends to construct four well pads during the first year of exploration and eight well pads in the second year. Depending on well productivity and market conditions, Fram proposes to drill up to nine wells on each pad, for a maximum of 108 wells, over a four year period. Fram will drill and complete up to approximately 25 wells per year with a single drilling rig. Wells would be in production for up to 14 years, and the life of the Project is estimated to be 20 years.

Existing U.S. and state highways, county, and BLM roads will be used to access the Project Area. Existing county, BLM, and private roads will be used to access the well pads and two existing facility sites (Reeder Mesa and Sink Creek). Within the Project Area, Fram proposes to use approximately 16.82 miles of existing roads that do not require improvement, 3.42 miles of existing roads that require minimal upgrades (within the existing disturbance), 19.46 miles of existing two-track roads that may require upgrading; and to construct up to 1.67 miles of new resource roads (see Map 1). Existing two-track roads may be used as "primitive" two track roads to a well pad until it is certain that the well will be productive. Once wells are productive, Fram proposes to install up to 34 miles of oil, gas, and water gathering pipelines co-located in the same trench. Gathering pipelines have been located adjacent to new and existing roads to the greatest extent possible.

This document describes the existing and proposed roads that will be used for access, identifies the parties responsible for road maintenance, describes plans for constructing new roads and upgrading existing two-track roads, and estimates the traffic levels associated with construction and operation of the project.

1.2 ACCESS ROUTES

1.2.1 Primary Access Routes in the Project Area

Road types, or functional classifications, describe the functions that roads serve in facilitating traffic flows within a transportation network. Principal arterial roads, such as interstates and state highways, accommodate high traffic volumes and have limited access. Minor arterial roads include county roads that connect population centers with principal arterials. Collector roads include county and BLM roads that provide primary access to large blocks of land, and are generally two lanes wide.

Map 1

Table 1 lists the arterial and collector roads that will either be used to access the Project Area or are within the Project Area. The table also indicates road surface type and identifies the party responsible for road maintenance. Map 2 shows the parties responsible for access road maintenance by road segment.

Table 1
Primary Access Routes

Road Name	Road Type	Surface Type	Maintenance Responsible Party
Interstate -70	Arterial	Pavement	CDOT ¹
Interstate 70 Business Loop	Arterial	Pavement	CDOT ¹
State Highway 141/ 32 Road	Arterial	Pavement	CDOT ¹
U.S. Highway 50	Arterial	Pavement	CDOT ¹
Mesa County C Road	Collector	Pavement to 34 Road, Unpaved east of 34 Road	Mesa County to 34 Road, BLM east of 34 Road
Kannah Creek Road	Collector	Pavement	Mesa County
Lands End Road	Collector	Pavement	Mesa County
Whitewater Creek Road	Collector	Gravel surface with magnesium chloride	Mesa County
¹ CDOT = Colorado Department of Transportation			

Local and resource roads include BLM and private roads that link areas with low traffic volumes to higher classification roads. Local roads connect to collector roads and serve a smaller area than collector roads, and may be one or two lanes with lower traffic volumes. Resource roads are BLM roads that provide point access, connecting to local or collector roads, and are single lanes to individual well pads.

1.2.2 Access Overview

From Interstate-70, access to the Project Area is via the Interstate-70 Business Loop, State Highway (SH) 141, and US 50. The primary (southern) access route will enter the southern portion of the Project Area from US 50 and Kannah Creek Road. A secondary (northern) access route leading off of Mesa County C Road will be used in winter months (December 1 to April 30) to access northern portions of the Project Area and avoid or minimize traffic within sensitive big game (elk and mule deer) winter habitats.

Both access routes exit Interstate-70 onto the Interstate-70 Business Loop in Clifton (Exit 37) and proceed south for approximately 1.5 miles to SH 141. The routes turn left onto SH 141 and proceed approximately 0.25 mile, at which point SH 141 merges with 32 Road. The routes continue on SH 141/32 Road for another 2.0 miles to cross the Colorado River. Approximately 0.43 mile south of the river, SH 141/32 Road intersects C Road. Access to and within the Project Area from this point is described in Section 1.2.4. The primary (southern) access route continues south on SH141/32 Road for approximately 2.6 miles to intersect US 50, where the route turns left and follows US 50 southward for approximately 6.9 miles to Kannah Creek Road.

1.2.3 Southern Access Route: Kannah Creek Road

From US 50, the primary (southern) access route turns east on Kannah Creek Road and proceeds approximately 1.6 miles to the Whitewater Unit boundary and enters the Project Area. Within the Project Area, the access route follows Kannah Creek Road, a paved road that will not require upgrades, for approximately 0.5 mile, where an unpaved road that will not require upgrades exits

Map 2

to the left (north) to access the existing Reeder Mesa facility. Beyond this turn-off, the primary access route follows Kannah Creek Road approximately 0.8 mile to encounter a Y-Junction. Veering right (south), the access route continues on Kannah Creek Road for approximately 5 miles, and turns right (south) onto an unimproved road (upgrades required) and proceeds approximately 0.5 mile to a new 0.2 mile resource road that will access proposed Well Pad Federal 13-98-12-2. Proposed Well Pad Federal 13-97-18-2 is located approximately 1.6 miles beyond the new resource road exit.

Turning left (north) at the Y-Junction noted above, the access route follows Lands End Road, a paved road that will not require upgrades, for approximately 4.8 miles to access Water Take Point #1. Just beyond this point, an unimproved road (upgrades required) leads east for 0.6 mile to a new resource road that will proceed approximately 0.5 mile to access proposed Well Pad Federal 12-97-30-1. Beyond the exit to this well pad, the primary access route continues for approximately 0.8 mile to the end of Lands End Road (beyond this point, the road becomes a Forest Service road). The access route turns left onto a paved road that will not require upgrades and heads west for approximately 0.1 mile to access Water Take Point 2 and another 1 mile to access proposed Well Pad Federal 12-98-24-2. From here, the route turns right onto an improved road that will not require upgrades and proceeds north for approximately 1.1 miles to join Whitewater Creek Road, an improved road that will not require upgrades. At this point, an unimproved road (upgrades required) will lead approximately 0.8 mile northeast to proposed Well Pad Federal 12-97-7-1.

The southern access route follows Whitewater Creek Road for approximately 0.4 mile, then turns right (north) onto an improved road that will not require upgrades, proceeds approximately 0.2 mile to access Water Take Point 3, and continues for approximately 0.8 mile to the existing Sink Creek Facility. Approximately 0.6 mile beyond this facility, the access route follows an unimproved road (upgrades required) for approximately 0.7 mile, at which point an unimproved road (upgrades required) exits to the left and proceeds approximately 1.8 miles southwest to proposed Well Pad Federal 2-2-2-1. Beyond this exit, the access route proceeds 1.5 miles to a Y junction. To the left, an unimproved road (upgrades required) will lead 3.4 miles to proposed Well Pad 1-2-33-1. To the right, the access route continues for approximately 1.8 miles to an X junction. Straight beyond this junction, an unimproved road (upgrades required) will proceed 2.7 miles to proposed Well Pad Federal 1-2-25-2. Turning right at the junction, an unimproved road (upgrades required) will proceed 0.4 mile to proposed Well Pad 1-2-26-2. Turning left at the junction, the access continues approximately 1.4 miles to a Y junction. To the right, an unimproved road (upgrades required) leads 0.5 mile to proposed Well Pad Federal 1-2-15-1. To the left, the access route continues 0.4 mile, where another unimproved road (upgrades required) turns south for approximately 0.4 mile to access proposed Well Pad Federal 1-2-22-1. The access route continues for 0.3 mile beyond the exit to proposed Well Pad Federal 1-2-22-1, at which point 0.1 mile of new resource road will be constructed to access proposed Well Pad Federal 1-2-16-1.

1.2.4 Northern Access Route: C Road

From SH 141/32 Road, the northern access route follows C Road approximately 2.8 miles to the Whitewater Unit boundary, where it enters the Project Area. The access route, which will require minimal upgrading (within the existing disturbance) east of 34 Road, passes through approximately 0.7 mile of a northwestern corner of the unit, leaves the unit for approximately 0.7

mile, re-enters the unit, and proceeds approximately 2.0 miles to a resource road leading to proposed Well Pad Federal 1-2-16-1. At this point, the northern access route uses the same roads as the primary (southern) access route, and continues 0.3 mile to a resource road leading to Well Pad Federal 1-2-22-1, another 0.4 mile to a resource road leading to proposed Well Pad Federal 1-2-15-1, and proceeds 1.4 miles to a four-way X junction. Straight ahead, the access route continues 0.4 miles to proposed Well Pad Federal 1-2-26-2. Turning right at the junction, the access route proceeds 1.8 miles to a resource road that continues 3.4 miles to proposed Well Pad Federal 1-2-33-1. Resource roads to each well pad accessed by the northern access route were described above in the description of the primary (southern) access route.

1.3 SEASONAL ACCESS DESCRIPTION

The Project Area includes sensitive big game winter habitats (see Map 3). Proposed well pads located within these habitats are subject to lease stipulations which include timing limitations for construction and drilling/completion during winter months (December 1 through April 30). Other proposed well pads have access through sensitive big game wildlife habitats, but there are no lease stipulations associated with the well pad. In accordance with BLM GJFO's Standard Conditions, BLM would impose a 60 day timing limitation (January 1 to March 1) for construction and drilling/completion for these well pads. Several well pads in the northern portion of the Project Area are not located in sensitive big game winter habitats, but would cross through such habitats using the southern access route. Use of a northern access route would eliminate the need for general access from the south through the sensitive big game winter habitats, allowing those well pads to be constructed and for drilling/completion to occur between December 1 and April 30.

Use of the northern access route during the winter months will also allow for a reduction in operational traffic through sensitive big game winter habitats that would otherwise occur on the southern access route. Operational traffic includes pumper and maintenance light vehicles and oil and produced water heavy vehicles. Table 2 provides a listing of proposed seasonal access routes by well pad for both construction and operation.

ROAD CONSTRUCTION, USE, AND MAINTENANCE

1.3.1 Existing Roads

Fram proposes to use approximately 16.82 miles of existing, mostly paved roads within the Whitewater Unit that will not require upgrading. These roads are identified in Table 1 above, along with the party responsible for road maintenance.

In addition, approximately 19.46 miles of existing two-track roads could be used for access within the Project Area during construction/drilling. When site conditions are appropriate and when approved by the BLM, these roads may be used as "primitive" two-track roads to drilling locations when it is not certain that the well will be productive, or to producing wells where vehicle traffic is infrequent due to the use of off-site production facilities and automated well monitoring (BLM and Forest Service, 2007). The use of primitive roads is site-specific and will be based on anticipated dry or frozen soil conditions, seasonal weather conditions, flat terrain, low anticipated traffic, and/or driller's or operator's access needs. Low vehicle speed (20 mph or less) will be used on primitive roads, which will require four-wheel drive or high clearance

vehicles. Minor or moderate grading may occur, but primitive roads will not be flat bladed. Drainage will be maintained, where appropriate, to avoid erosion or the creation of a muddy, braided road. Primitive roads are not intended for use as all-weather access roads. Any resource damage will be repaired as soon as possible and Fram will consult with the BLM to determine if all or a portion of the road should be upgraded to an all-weather access road.

1.3.2 Road Construction

Upgrading of roads will occur mostly within the existing road disturbance, but disturbance outside of the existing road footprint may be necessary for the road to meet anticipated traffic flow and all-weather requirements. The existing two-track roads are generally 14 to 16 feet in width and upgrading outside the disturbance footprint would not exceed 24 feet in width. Any upgrading of the northern access route (3.42 miles) would be done within the existing disturbance to protect sensitive resources.

Map 3

Table 2
Proposed Seasonal Access Routes by Well Pad for Construction and Operation

Proposed Well Pad	Sensitive Big Game Winter Habitat ¹	Big Game Lease Stipulation	Timing Limitation No Construction Allowed	Construction Traffic Access ²	Operational Traffic Access ³	Oil/Water Production
Federal 13-98-2	Access only	No	1/1 - 3/1	Southern - 3/2 – 12/31	Southern - YR	Flows to Reeder Mesa YR ⁴
Federal 13-97-8-2	Yes	Yes	12/1 - 4/30	Southern - 5/1-11/30	Southern - YR	Flows to Reeder Mesa YR ⁴
Federal 12-97-30-1	Yes	Yes	12/1 - 4/30	Southern - 5/1 -11/30	Southern - YR	Flows to Reeder Mesa YR ⁴
Federal 12-98-24-2	Access Only	Yes	12/1 - 4/30	Southern - 5/1 -11/30	Southern - YR	Flows to Sink Creek YR ⁵
Federal 12-97-7-1	Access Only	Yes	12/1 - 4/30	Southern - 5/1 -11/30	Southern - YR	Flows to Sink Creek YR ⁵
Federal 1-2-15-1	No	No	None	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Flows to Sink Creek – 5/1 – 11/30 Wellhead – 12/1 – 4/30
Federal 1-2-16-1	No	No	None	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Flows to Sink Creek – 5/1 – 11/30 Wellhead – 12/1 – 4/30
Federal 1-2-22-1	No	No	None	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Flows to Sink Creek – 5/1 – 11/30 Wellhead – 12/1 – 4/30
Federal 1-2-26-2	No	No	None	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Flows to Sink Creek – 5/1 – 11/30 Wellhead – 12/1 – 4/30
Federal 1-2-33-1	No	No	None	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Flows to Sink Creek – 5/1 – 11/30 Wellhead – 12/1 – 4/30
Federal 1-2-25-2	Access only	Yes	12/2 – 4/30	Southern – 5/1 – 11/30	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Flows to Sink Creek YR ⁵
Federal 2-2-2-1	Access only	No	1/1 - 3/1	Southern – 5/1 – 11/30 Northern 12/1 – 12/31 Northern 3/2 – 4/30	Southern - 5/1 – 11/30 Northern - 12/1 – 4/30	Flow to Sink Creek YR ⁵

¹ Sensitive Big Game Winter Habitat considers 1) Colorado Parks and Wildlife (CPW) 2011 mule deer and elk severe winter range, winter concentration area, and/or critical winter range, and 2) Colorado Oil and Gas Conservation Commission (COGCC) 2008 sensitive wildlife habitat coverage for mule deer critical winter range and elk winter concentration area. Within the Project Area, the CPW and COGCC GIS coverages overlap entirely.

² Construction includes well pad construction, drilling and completion.

³ YR = year round

⁴ The southern access route provides year round access to the Reeder Mesa Facility.

⁵ Access to the Sink Creek Facility for oil and produced water collection is via the southern route from May 1 to November 30, and via the northern route from December 1 to April 30.

Approximately 1.67 miles of new resource roads will be required to access the proposed well pads from upgraded local roads. The new resource roads will be constructed at the same time as the respective well pad construction. The resource roads could require up to 24 foot width for construction.

If the well proves productive and it is determined that an all-weather route is required, constructed roads will be upgraded to meet standards for the anticipated traffic flows and all-weather requirements. Road construction will be in compliance with the BLM GJFO Standard Conditions for Road Construction, Use and Maintenance, and the BLM/Forest Service *Surface Operating Standards and Guidelines for Oil and Gas Development*, also known as the *Gold Book* (BLM and Forest Service, 2007).

Drainage control will be ensured over the entire road through the use of drainage dips, insloping and ditches, natural rolling topography, ditch turnouts, armored crossings, and/or culverts. Site-specific road design measures will consider grades, soils and local hydrology. Where culverts or drainage crossings are needed, they will be designed for a 25-year or greater storm event, without development of a static head at the pipe inlet.

Culverts will be constructed to replace low water crossings of municipal ditches on existing roads. BLM Road 7265 crosses Long Mesa Ditch, Lockhart Ditch, and Brandon Ditch, and will require culverts at these locations.

Fram will implement the following measures in accordance with the BLM GJFO Standard Conditions for Road Construction, Use and Maintenance. Where appropriate, these measures will apply to existing primitive two-track roads and new road construction:

- Roads will be crowned or sloped, drained with ditches, culverts and/or water dips, and constructed, sized, and surfaced in compliance with BLM Gold Book standards (pp. 24-28). Water outlets will incorporate BMPs such as rip-rap, sediment catchments, and anchored check structures to slow water velocity and prevent erosion and sediment transport. If applicable, initial gravel application shall be to a minimum depth of 3 inches.
- When saturated soil conditions exist on access roads or locations, or rutting deepens to 3 inches, construction and travel will be halted until soil material dries out or is frozen sufficiently or is otherwise brought to standards appropriate for resource protection and road construction. Use will not proceed under conditions of undue damage and erosion to soils, roads and/or locations. All drainage ditches and culverts will be kept clear and free flowing, and will be maintained in good condition.
- Where roads are located near drainages, vegetated buffer strips will be left between areas of disturbance and drainages.
- Fram will provide timely maintenance of roads. A regular schedule for maintenance will include, but not be limited to dust abatement; reconstruction of the crown, slope, or water dips/bars; blading or resurfacing; clean-out of ditches, culverts, catchments; and other BMPs. When rutting of the travel-way reaches depths of 3 inches, maintenance or upgrade shall be conducted as approved by the BLM.

- Roads that access active construction and drilling sites will be posted with warning signs to alert hunters and recreational vehicle users to Project personnel and vehicles in the area. Project personnel will restrict activities and travel to permitted roads and sites.
- Fram will install speed control measures on project-related unpaved roads.
- Ditches may be revegetated and/or include large rocks or other BMPs to slow drainage velocity and settle sediment. Ditch seeding and revegetation may be required in erodible soils.
- All cut and fill slopes for roads and well pad locations shall be protected against rilling and erosion with BMPs such as soil texturing and seeding or additional measures approved by the BLM. Measures may include geotextiles, weed-free straw crimping/bales/wattles/matting, as needed or as detailed by storm water plan or BLM permit. BMPs will be monitored and maintained in functional condition.

In 2012, Timberline Engineering and Land Surveying of Vernal, Utah identified road segments in the Project Area that will require new construction and/or upgrades when it is determined that the well will be productive and an all-weather road will be required (see Attachment A). Fram's construction plans for new and upgraded road segments to accommodate anticipated traffic flows are provided in Attachment A.

Fram will coordinate with the Mesa County Public Works – Road and Bridge Department to insure that use of county roads conforms with issued use permits, rights of way, and other county requirements. Paved roads are not likely to require improvement or maintenance prior to or during Project construction. Paved roads used for access will be maintained by the Colorado Department of Transportation (CDOT) and Mesa County. Additionally, Mesa County will maintain Whitewater Creek Road, which is unpaved (see Table 1). Fram will maintain other roads with gravel or dirt surfaces, including C Road east of 34 Road, during construction and operation.

Fram will restrict activities and travel to permitted roads and sites. Speed limits will be posted and followed. Where there is no posted speed limit, speeds on unpaved access roads and disturbed areas will not exceed 20 miles per hour.

Dust suppression will be implemented by spraying water onto unpaved roads on an as-needed basis. Magnesium chloride and other surfactants, binding agents, or other dust-suppression chemicals will not be used for dust control without prior approval from the BLM.

1.4 TRAFFIC LEVELS

1.4.1 Construction Traffic

Absent any well production, peak traffic levels in the Project Area during construction will occur with one well pad and its access road under construction, one well being drilled, and one well being completed. During the summer, when trucks are applying water for dust control, project-related construction traffic could potentially include 18 light vehicle and 16 heavy vehicle round trips per day (see Table 3). These traffic levels would be expected on the southern access route. During the winter (December 1 to April 30), when pipeline and road construction, dust control, and interim reclamation will not occur, project-related construction traffic could include 11 light

vehicle and 10 heavy vehicle round trips per day. These traffic levels would be expected to occur on the northern access route.

Table 3
Whitewater Unit Estimated Peak
Construction Traffic in Vehicle Round Trips per Day

Construction Phase Activity	Duration (days)	Peak Vehicle Round-Trips per Day		
		Light Vehicles	Heavy Vehicles	Total Vehicles
Pad Construction	10 ¹	2 ¹	1 ¹	3
Drilling	10 ²	5 ²	5 ^{2,3}	10
Completion	5 ²	2 ⁴	4 ⁵	6
Dust Control	25	0	3 ⁶	3
Interim Reclamation	3 ¹	0	1 ¹	1
Deliveries	25	2 ¹	0	2
Pipeline and Road Construction	145 – 254 ⁷	7 ⁸	2 ¹	9
Total Construction Traffic – Northern Access Route⁹		11	10	21
Total Construction Traffic – Southern Access Route¹⁰		18	16	34

¹ Industry averages.

² Source: Whitewater Unit Master Development Plan.

³ Includes one 120-barrel water truck delivering the 1,950 barrels of water needed to drill and complete a well (no recycling) over 15 days, and 4 additional heavy trucks.

⁴ Assumes that vans transport completion workers to the Project Area.

⁵ Includes 1 water truck (see footnote #3) and 3 additional heavy trucks.

⁶ Assumes that 40 barrels of water will be required per mile per day, and that one 80 barrel capacity truck will apply water to 6 miles of unpaved road surfaces per day during summer months. Trucks applying water for dust control will not use the northern access route.

⁷ Assumes a total of 27 miles of new pipeline and 25 miles of upgraded and new roads, that roads and pipelines are constructed concurrently, and that 1 mile of pipeline and road can be constructed in 4 to 7 days.

⁸ Assumes that one 21-man crew is required to build the pipeline and that workers carpool with 3 workers per vehicle.

⁹ Assumes that dust control, interim reclamation, and road and pipeline construction activities do not occur during the winter.

¹⁰ Includes vehicles associated with all construction activities.

Additional traffic will occur during periods of rig mobilization, when project-related traffic could include an additional 10 heavy trucks, for a total of 18 light vehicle and 26 heavy vehicle round trips per day on the southern access route. A drilling rig will enter the Project Area via the southern access route at the beginning of construction and remain in the Project Area throughout drilling. Traffic associated with rig mobilization and dust control will not use the northern access route. Rig mobilization and demobilization are both expected to require one day.

The estimated peak traffic levels are based on several assumptions about the number of vehicles that would be required for each construction activity (see Table 3 footnotes) and assume that the maximum number of vehicles associated with each construction activity would travel on the same day. Typical traffic levels during construction are likely to be lower than peak traffic

estimates, depending on the number of construction activities taking place and the extent of each activity being conducted.

Traffic on primitive two-track roads will include a maximum of 12 vehicles per day. This level of traffic is expected to occur for approximately 10 days, and would include 10 drilling vehicles and two delivery vehicles. Additional traffic on primitive two-track roads will include five vehicles per day during the approximate 10 days of well pad construction (three vehicles related to pad construction and two delivery vehicles), and eight vehicles per day during the five-day completion period (six completion vehicles and two delivery vehicles).

1.4.2 Operational Traffic

Traffic associated with producing wells will include pumper and maintenance vehicles to individual well pads, and dust suppression, oil and produced water trucks to well pads and central facilities. Pumper visits to well pads will be determined by information gathered from telemetry equipment and will average one pumper vehicle per day. One maintenance vehicle will visit each well pad for approximately 10 days per year. Water trucks will apply water to unpaved road surfaces on as-needed basis.

Oil production is expected to peak in the early years of a well's productive life and decline rapidly thereafter. From May 1 to November 30, oil and produced water from all wells will be gathered in the proposed gathering lines and stored at the Sink Creek and Reeder Mesa facilities. During the winter, gathering lines will continue to carry oil and produced water from well pads Federal 13-98-12-2, Federal 13-97-8-2, and Federal 12-97-30-1 to the Reeder Mesa Facility; and gathering lines will continue to carry oil and produced water from well pads Federal 12-98-24-2, Federal 12-97-7-1, Federal 1-2-25-2, and Federal 2-2-2-1 to the Sink Creek Facility. During the winter, trucks will collect the liquids at the two facilities for off-site transport. Oil and water from all other wells would normally flow to the Sink Creek or Reeder Mesa facilities; however, to minimize traffic within big game sensitive wildlife habitat in the winter, trucks will pick up the oil and water directly at the remaining well pads (see Table 2) using the northern access route.

Depending on the volume of oil produced, between two and 17 oil trucks (200 barrel capacity) per day are expected to be required to transport field-wide production to markets, and between one and four water trucks per day are expected to haul produced water to the Deer Creek disposal facility off US-50. One water truck (80 barrel capacity) is expected to be required for dust control during the production-only phase. Assuming that 25 wells are drilled per year, field-wide production will peak in Year 4. Averaged over the project's anticipated 20 year productive life, operational traffic will include seven oil trucks and three produced water trucks per day. Actual traffic levels will be highly dependent on the amount of oil and water produced per well, and will decrease over the life of the Project due to declining well productivity.

1.4.3 Peak Traffic Levels

Traffic levels will peak in Year 2 with a combination of construction and operational vehicles. Peak traffic will occur with one well pad and its associated roads and pipelines under construction; one well being drilled; one well in completion; and dust control, interim reclamation, and deliveries taking place; and approximately 50 wells in production. At

anticipated production levels, under these conditions peak traffic will occur during the summer, with up to 48 vehicle round-trips per day on the southern access route (see Table 4). Assuming that pad construction, drilling and completion activities are taking place in the northern part of the unit during the winter, peak winter traffic on the southern access route could include six vehicle round-trips per day; and peak winter traffic on the northern access route could include 29 vehicle round-trips per day (see Table 4).

Table 4
Whitewater Unit Estimated Peak Traffic
Requirements (Year 2) in Vehicle Round Trips per Day

Access Route and Project Activity	Peak Vehicle Round-Trips per Day					
	Summer (May 1 - Nov 30)			Winter (Dec 1 – Apr 30)		
	Light Vehicles	Heavy Vehicles	Total Vehicles	Light Vehicles	Heavy Vehicles	Total Vehicles
Southern Access Route						
Construction Traffic ¹	18	16	34	0	0	0
Operational Traffic ^{2,3}	2	12	14	1	5	6
Total Traffic	20	28	48	1	5	6
Northern Access Route						
Construction Traffic ⁴	0	0	0	11	10	21
Operational Traffic ^{2,3}	0	0	0	1	7	8
Total Traffic	0	0	0	12	17	29
¹ Includes all construction activities noted in Table 3. ² Assumes that pumper and maintenance vehicles do not use the same access routes on the same days. ³ Note that operational vehicle traffic volumes in Year 2 do not equal the Year 4 peak operational traffic volumes discussed in Section 1.4.2. Although operational traffic volumes increase through Year 4 due to more wells coming into production, total traffic volumes peak in Year 2 because of the higher volume of vehicles associated with well pad, road, and pipeline construction. ⁴ Assumes that pad construction, drilling, completion, and deliveries occur during the winter, and that dust control, interim reclamation, and road and pipeline construction activities occur during the summer only.						

Peak summer traffic levels will begin to fall in Year 3 due to the completion of well pad, access road, and pipeline construction. Following Year 5, traffic volumes will decline continuously due to the completion of all construction activities and expected declines in field-wide production. Between Year 6 and Year 20, summer traffic is expected to average 12 vehicles per day, all of which will use the southern access route. Winter traffic is expected to average nine vehicles per day on the northern access route and three vehicles per day on the southern access route.

References:

Bureau of Land Management and Forest Service (BLM and Forest Service). 2007. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development. Gold Book. Fourth Edition.

Attachment A

Fram Whitewater Unit – Proposed Road Improvements